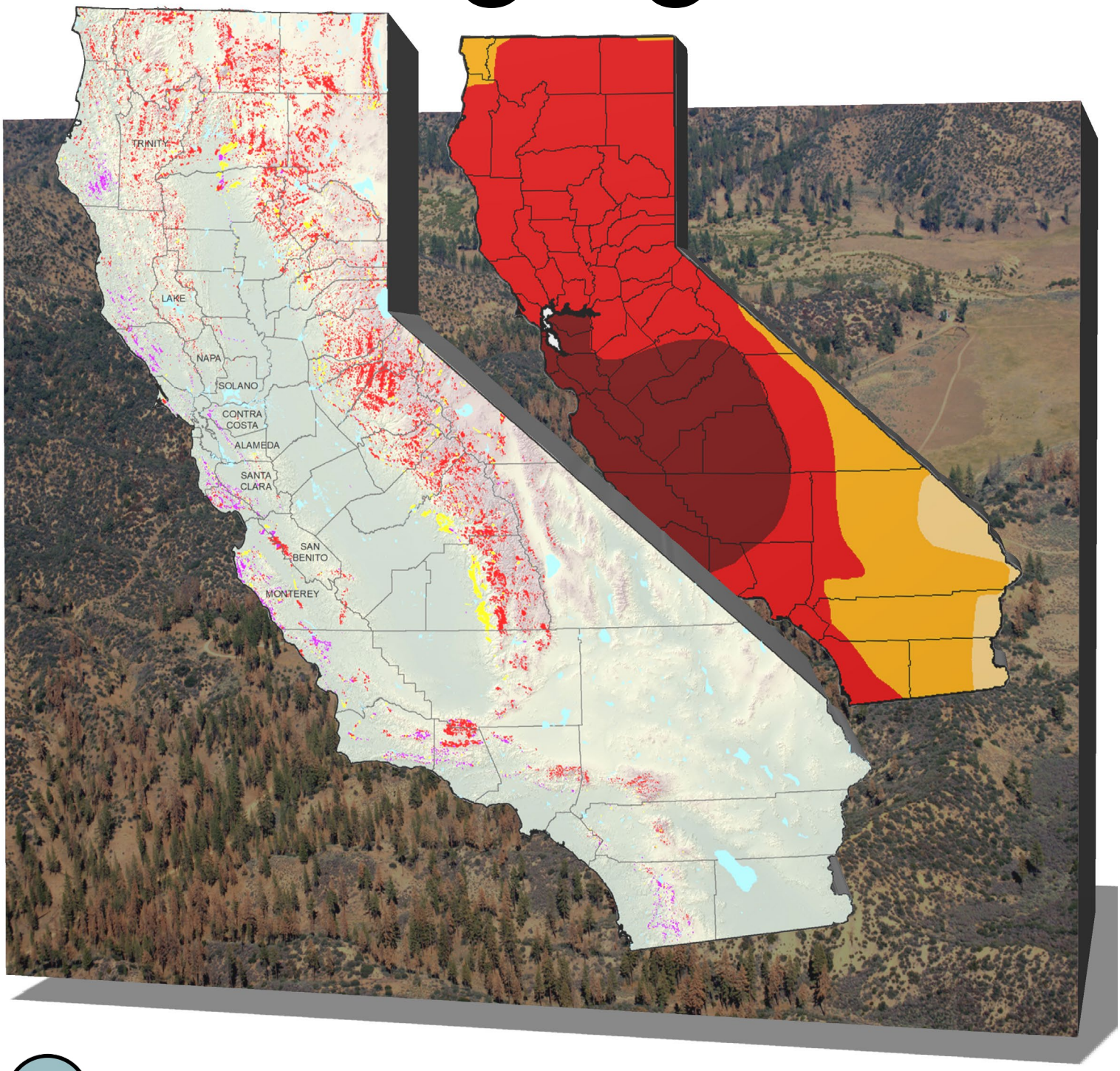
2014

California Forest Health Highlights



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California Forest Pest Council

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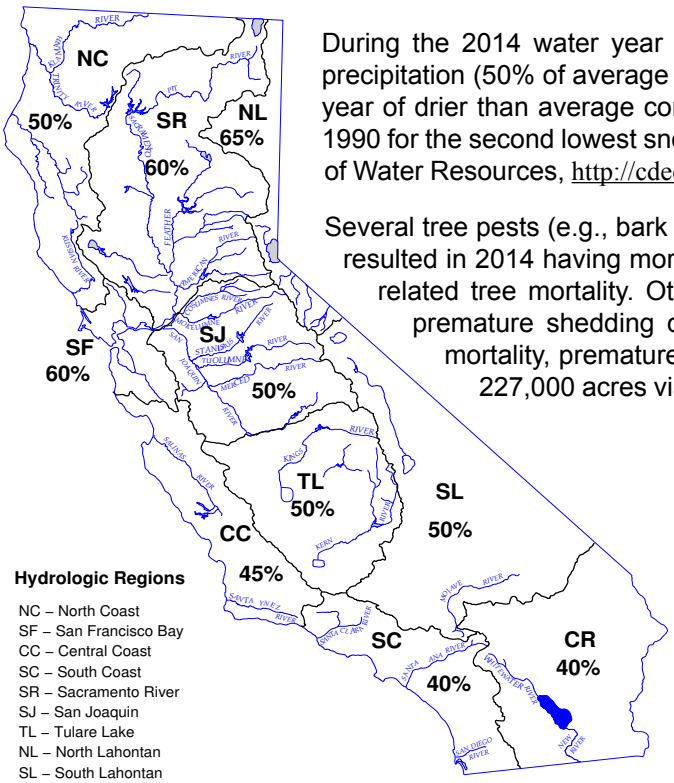
Seasonal precipitation in percent of average to date. October 1, 2013 through April 30, 2014.
Map by: Department of Water Resources, California Cooperative Snow Surveys



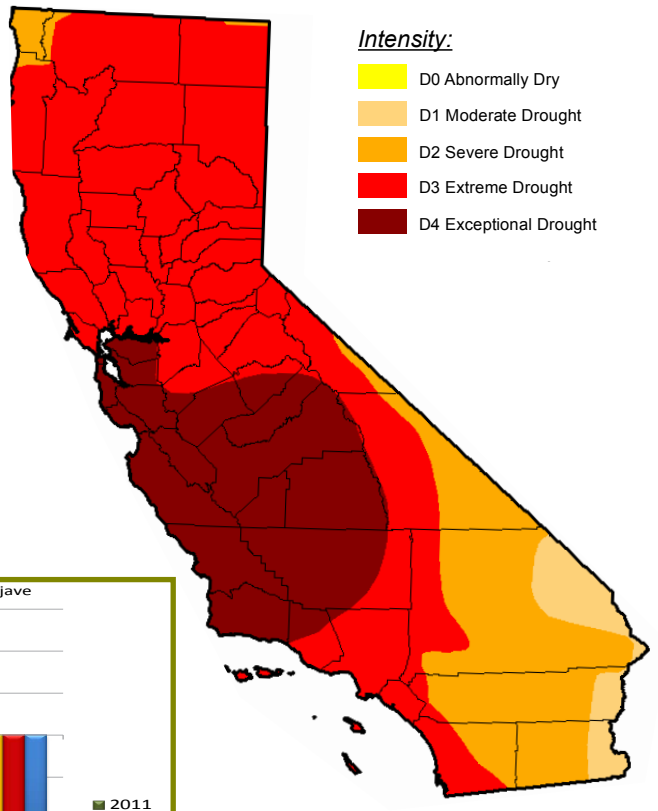
Hydrologic Regions

NC – North Coast
SF – San Francisco Bay
CC – Central Coast
SC – South Coast
SR – Sacramento River
SJ – San Joaquin
TL – Tulare Lake
NL – North Lahontan
SL – South Lahontan
CR – Colorado River–Desert

During the 2014 water year (Oct. 1, 2013 – April 30, 2014), California experienced below-average precipitation (50% of average statewide). For many areas of the state this marked the third consecutive year of drier than average conditions. The May 1, 2014 snow water content average of 15% tied with 1990 for the second lowest snow water content level on record, exceeded only by that of 1977 (CA Dept. of Water Resources, http://cdec.water.ca.gov/snow/bulletin120/b120may14.pdf).

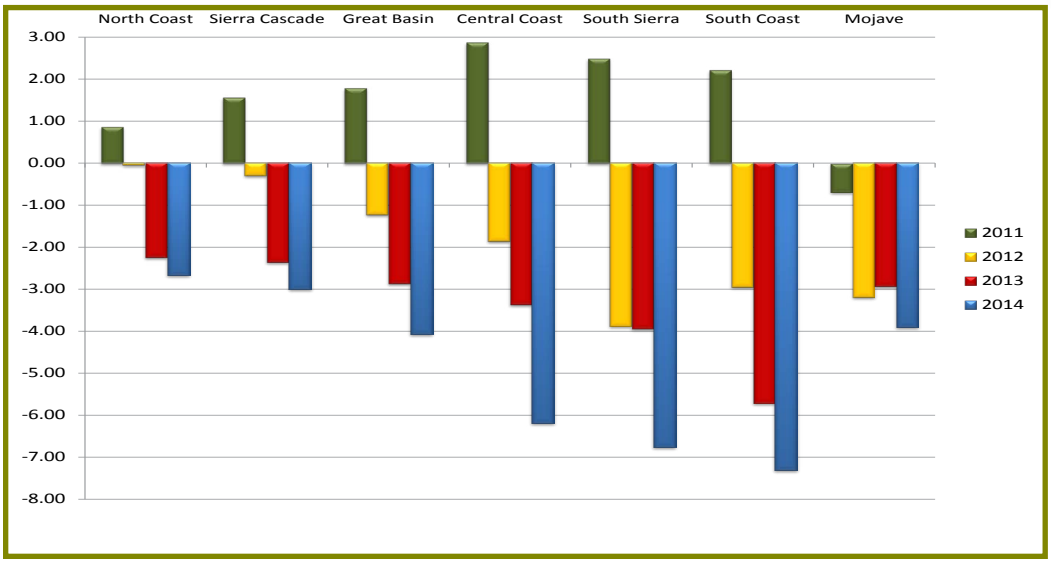
Several tree pests (e.g., bark beetles) are more prolific when host trees are stressed by drought, which resulted in 2014 having more than double the acres detected in 2013 with some level of bark beetle-related tree mortality. Other drought responses observed during 2014 included desiccation and premature shedding of leaves by native oak species. Varying levels of drought-related tree mortality, premature defoliation, early foliage color change, and leaf drop were mapped over 227,000 acres via aerial survey in 2014.

US Drought Monitor map of California, April 29, 2014.
Map by: E. Luebehusen, NCDC/NOAA, Western Regional Climate Center



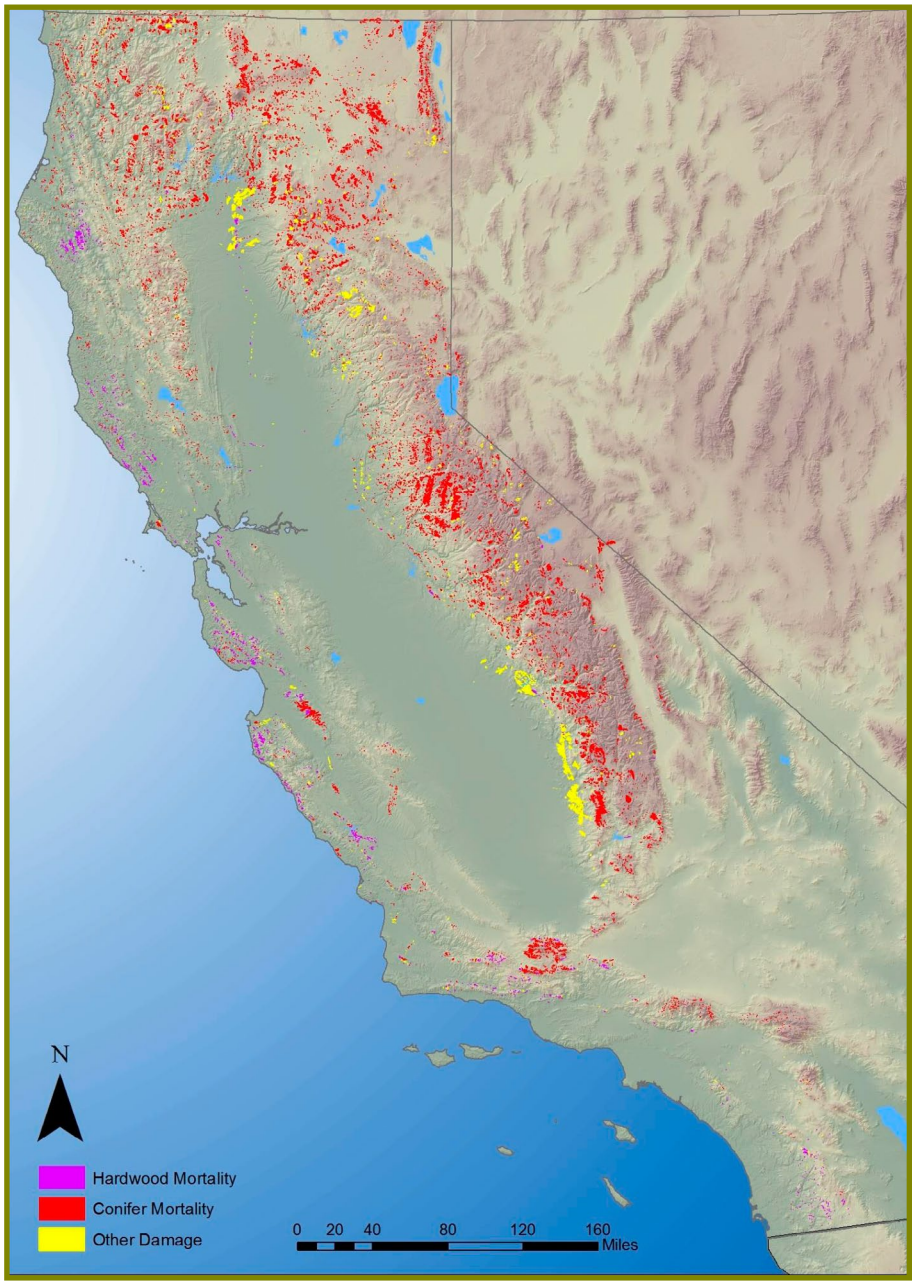
Palmer Drought Index

The Palmer Drought Index is an indicator of drought and moisture excess, with negative values denoting degree of drought. In 2014, the yearly average Palmer Drought Index values were negative across California, ranging from -2.68 on the North Coast (wettest zone) to -7.31 in coastal southern California (driest zone).



By Zachary Heath

Aerial surveys are conducted annually to map dead and declining trees in California's forests. Surveyors fly in light, fixed-wing aircraft and use a digital sketch-mapping system to document tree mortality and damage across the state. In 2014, mortality levels nearly doubled from 2013, with approximately 909,000 acres mapped over the 44.4 million acres flown and an estimated 3.3 million trees killed. The surveys took place from April 29th – September 11th. All NFs and forested NPs were surveyed, along with other federal, state, and private lands. (Acres reported below had some level of mortality detected on them.)



USFS California Aerial Survey Tree Mortality map, 2014. Map by: Z. Heath, USFS

Bark Beetles and Wood Borers

- Over 820,000 acres were mapped with elevated tree mortality levels due to bark beetles or wood borers, up from 350,000 acres in 2013.
- True fir mortality attributed to fir engraver beetle increased to 460,000 acres, up from 129,000 acres in 2013.
- Pine mortality from both western and mountain pine beetle increased, affecting about 260,000 and 220,000 acres, respectively.
- Acres with Jeffrey pine mortality attributed to Jeffrey pine beetles, engraver beetles, and California flatheaded borers increased to over 120,000 acres.
- About 58,000 acres with pinyon pine mortality from pinyon *Ips* beetle were mapped, a large increase from 2013.
- Nearly 25,000 acres with drought-related gray pine mortality were mapped, similar to 2013.
- Coulter pine mortality caused by western pine beetle and *Ips* increased over 10-fold to 13,000 acres.
- Douglas-fir beetle activity declined in 2014, but Douglas-fir mortality attributed to the flatheaded fir borer was nearly the same as in 2013, affecting trees across 16,000 acres.
- Goldspotted oak borer-related oak mortality in San Diego Co. increased from previous years to approximately 2,600 acres.

Defoliators

- Douglas-fir tussock moth-caused defoliation was observed on the Plumas and Lassen NFs, affecting trees across about 28,000 acres.
- Other foliage damage was caused by pine scales, lodgepole pine needleminer, satin moth on aspen, and Jeffrey pine needleminer.

Defoliation caused by Douglas-fir tussock moth, Plumas NF. Photo by: D. Cluck, USFS

White fir defoliation caused by Douglas-fir tussock moth, Quincy Ranger District, Plumas NF. Photo by: J. Moore, USFS

Diseases

- Despite new finds of sudden oak death (SOD) in Humboldt, Trinity, and Mendocino Cos., oak and tanoak mortality from SOD declined overall, affecting 28,700 acres in 2014, compared to over 47,500 acres in 2013. This is still much higher than 2011 levels, when 8,000 acres of mortality were mapped.
- Other observed diseases included Port-Orford-cedar root disease, western gall rust, pitch canker, and Cytospora canker on true fir.

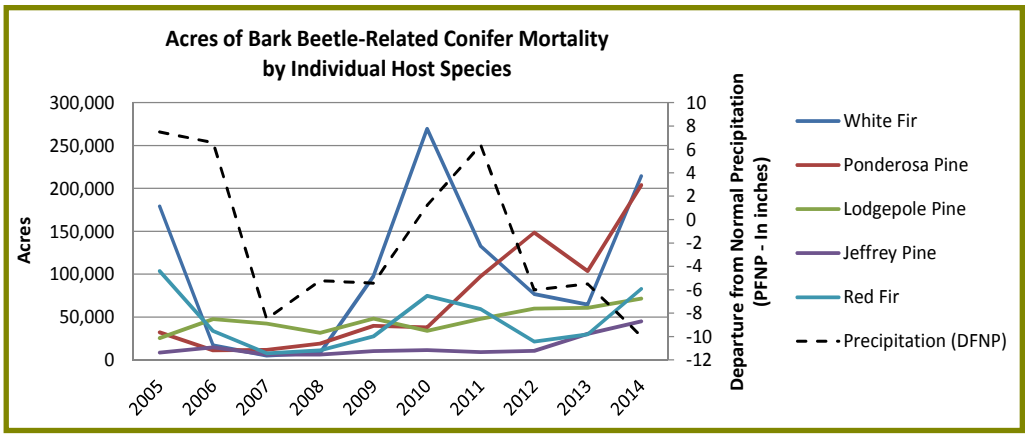
Tanoak mortality caused by *Phytophthora ramorum* (sudden oak death) near Monterey. Photo by: J. Moore, USFS

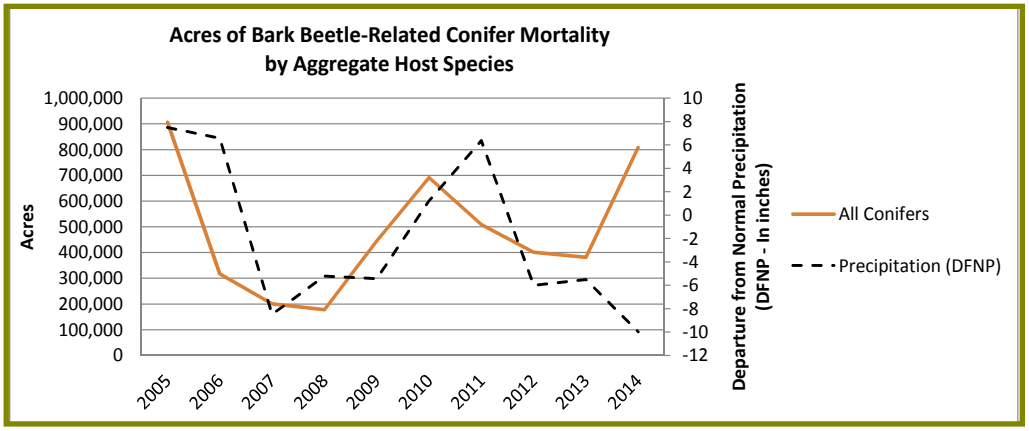
By Beverly Bulaon

Native Insects

Mountain Pine Beetle (*Dendroctonus ponderosae*) and Western Pine Beetle (*Dendroctonus brevicomis*)

Mountain pine beetle and western pine beetle (MPB and WPB, respectively)-caused tree mortality occurred in the Mount Shasta area, the Warner Mountains, and scattered locations of the Inyo, Klamath, Sierra, Sequoia, and Shasta-Trinity NFs. Mountain pine beetle activity continued to impact whitebark pine stands in northern and eastern Sierra Nevada Range forests and increased in other five-needled pines, including limber and foxtail. Western pine beetle continued to infest ponderosa pines, particularly in mature plantations and natural stands in the southern Sierra Nevada Range.





Bark beetle Infestation compared to precipitation. Charts by: A. Ellis, USFS

Defoliators

Defoliating insects were widespread in 2014, but the effects of their foliage feeding were more visually dramatic than damaging. Douglas-fir tussock moth (*Orgyia pseudotsugata*, DFTM) defoliated approximately 28,000 acres of white fir in northeastern California; however, most of the defoliation will not result in tree mortality. Douglas-fir tussock moth populations are expected to decline in 2015 based on fall 2014 egg mass surveys. Jeffrey pine needleminer (*Coleotechnites* sp.) continued to impact areas of South Lake Tahoe and was found along a 15-mile corridor of Highway 395, between June Mountain and Mammoth Lakes. No tree mortality was associated with either infestation. Lodgepole pine needleminer (*Coleotechnites milleri*) expanded its eastern range beyond Yosemite NP and continued to intensify in previously infested areas.

Fir engraver beetle-caused white fir mortality, north Warner Mountains, Modoc Co., September 2014. Trees with red crowns were killed in 2013. Trees killed in 2014 still have green crowns.
Photo by: D. Owen, Cal Fire

Fir Engraver Beetle (*Scolytus ventralis*)

True fir drought-related mortality continued to increase across the state, particularly in northern California. Fir engravers were found attacking all size classes of white fir, with the greatest infestations found in densely stocked, drier stands at lower elevations. Fir engraver beetle-caused mortality increased on the driest sites (<30" average annual precipitation), especially in the Warner Mountains, Modoc NF. Top kill caused by fir engravers attacking red fir was also prevalent throughout the Sierra Nevada Range, with some larger trees dying due to wood borers and fir engravers.

Insects in Fire-Injured Trees

Many of the trees severely injured from 2013 fires (e.g. Rim Fire) were found infested with wood borers and/or ambrosia beetles. Bark beetle activity increased on the Plumas NF in areas burned by the 2012 Chips Fire. Western pine, mountain pine, Douglas-fir, and fir engraver beetles were all observed attacking fire-injured host trees, contributing to high levels of mortality. This post-fire bark beetle activity was greater than what would be expected under more normal precipitation conditions.

Other Species

Pine engraver (*Ips* spp.)- and California flatheaded borer (*Phaenops californica*)-caused knobcone pine mortality was noted on the Shasta-Trinity NF. Small groups of gray pine mortality in the Sierra Nevada foothills and central coastal forests continued due to a complex of pests and drought conditions, and large groups of ponderosa and Coulter pine were killed by western pine beetle on the Angeles NF. Pinyon *Ips* (*Ips confusus*) and pinyon scale (*Matsuccocus acalyptus*) in the eastern southern Sierra Nevada Range greatly expanded in scope, and pinyon scale on the Santa Rosa Indian Reservation and San Bernardino NF persisted. Additionally, black stain root disease and woodborers were found contributing to some mortality of bristlecone pine.

Ips-related pinyon mortality, Chimney Peak Wilderness, BLM land. Photo by: B. Bulaon, USFS

Ips paraconfusus gallery in knobcone pine. Photo by: C. Snyder, USFS

Invasive Insects

Invasive insects were most active in southern California urban and wildland forests.

Polyphagous shot hole borer attacks on box elder in Whittier Narrows Recreation Area. Photo by: T. Coleman, USFS

Goldspotted Oak Borer (*Agrilus auroguttatus*)

The goldspotted oak borer (GSOB) continued to kill coast live oak and California black oak in San Diego Co., as severe drought increased oak susceptibility. In 2014, aerial surveys mapped >3,700 GSOB-killed oaks across 2,600 acres in eastern San Diego Co., representing a three-fold increase from 2013. The beetle was found on a second RD of the Cleveland NF in northern San Diego Co. where it was infesting and killing California black oak. New infested oaks were detected at the Riverside Co. satellite infestation, with all infested trees still located within the Idyllwild community, and an isolated infestation was found in northeastern Orange Co. in December, more than 60 miles from the San Diego Co. outbreak. This new site is believed to be the result of movement of infested firewood.

Polyphagus Shot Hole Borer (*Euwallacea* sp.) and Fusarium Dieback (*Fusarium euwallaceae*)

The polyphagus shot hole borer-*Fusarium* disease (PSHB/FD) complex was found in new areas of southern California, including avocado production groves in northern San Diego Co. The infestation spans five counties (Los Angeles, Orange, San Bernardino, Riverside, and San Diego Cos.) and includes one reservation and a few canyons on the Angeles NF. The USFS Forest Health Protection is collaborating with Forest Service Research and the University of California to delimit this infestation and determine the flight period, life cycle, host range, and impact to native stands. From preliminary surveys, PSHB/FD has killed box elder (27% mortality), castor bean (22%), red willow (16%), Fremont cottonwood (9%), Goodding's black willow (8%), California sycamore (5%), and white alder (2%), but also attacks many other hardwood species.

By Tom Smith

Abiotic Diseases

Precipitation remained low in 2014, leading to hardwood and conifer decline. It was a record year for forest fires, with estimated preliminary reports of 7,075 wildfires over 490,316 acres. Heavy damage to numerous woody plants in Tehama Co. was attributed to a major hail storm. Juniper mortality was detected in several locations in eastern California, and incense cedar were found in decline in the southern Sierra Nevada Range.

Hail damage on sugar pine, Raglin Ridge, Tehama Co. Photo by: D. Owen, Cal Fire

Native Diseases

Root Diseases

Mortality linked to Heterobasidion and black stain root disease (*Heterobasidion* spp. and *Leptographium wageneri*, respectively) increased in nearly all conifer species. Much of the mortality was due to secondary attacks by bark beetles (western pine beetle, mountain pine beetle, and pine engraver beetle on pine and fir engraver beetle on fir) on trees that were weakened by the combined effects of root disease and drought. One area where mortality was particularly evident was on the McCloud Flats area of the Shasta-Trinity NF (Siskiyou Co.). Black stain root disease and pinyon *Ips* continued to kill singleleaf pinyon pine east of Baldwin Lake on the San Bernardino NF (San Bernardino Co.).

Western Gall Rust (*Endocronartium harknessii*)

Western gall rust was particularly severe in various parts of the state, with damage found on trees in coastal areas as well as the Sierra Nevada foothills.

Mycosphaerella molleriana and *Readeriella* spp

Over 200 acres of blue gum eucalyptus trees in San Luis Obispo Co. were affected by leaf spot and stem lesions caused by *Mycosphaerella molleriana* and *Readeriella* spp. Damage appeared as tree dieback from the top downward.

Maple Leaf Scorch

Maple leaf scorch on big leaf maple remained a problem in 2014. The disease is thought to be caused by the xylem-limited bacterium *Xylella fastidiosa*. However, trees that were injected with insecticides 2 years ago recovered somewhat, showing a possible role for insects in the complex. Whether the insects are the main culprit or simply carriers of the bacterium is yet to be determined.

Locations where maple leaf scorch has been observed in Northern California. Map by: B. Woodruff, USFS

Northern coastal California bishop pine stand. Photo by: T. Scholars, College of the Redwoods

Bishop Pine Tree Decline

Bishop pine (*Pinus muricata*) tree decline continued along coastal California. In some cases, entire tree stands have collapsed and lack any appreciable recruitment of new cohorts. A serotinous species, these pines rely on fire for regeneration. With a number of large fires having occurred along the coast of Sonoma and Mendocino Cos. following WWII, many of California's bishop pine stands are even aged and are nearing the end of their life span. Trees in these stands are being further stressed by disease, bark beetles, and thick understory vegetation and duff layers (caused from a lack of fire) that inhibit seed germination and recruitment.

Exotic Diseases

White pine blister rust canker on western white pine with aecial pustules. Photo by: P. Maloney, UC Davis

White Pine Blister Rust (*Cronartium ribicola*)

Telial *Ribes* leaf with urediniа and urediniospores and basidia and basidiospores on the sides of the telial columns. Photo by: D. Vogler, USFS

California has the greatest diversity of white pines in North America, with six species distributed across coastal and interior forests. All species are host to the non-native pathogen *Cronartium ribicola*, cause of white pine blister rust (WPBR). Moderate to high levels of WPBR infection are found on sugar pine, western white pine, and whitebark pine (throughout most of their respective ranges in the state), with low to moderate infection found on foxtail pine in the Klamath region. No infection has been found on Great Basin bristlecone and limber pine. *Cronartium ribicola* is common and widespread throughout California, but varies considerably within and between regions. Very little to no disease has been found in the eastern (e.g., Basin and eastern Sierra Nevada) and southern portion (e.g., Transverse and Peninsular Ranges) of the state; however, WPBR is prevalent in northern California (coastal and Klamath region), the southern Cascades (Shasta and Lassen region), and much of the Sierra Nevada Range (north, central, and southwestern slopes). The pathogen has yet to be detected in the Tehachapi and southern California mountains.

During the course of a multi-year, comprehensive white pine cone collection in the Great Basin, cones were obtained and seed collected from two of the easternmost distributions of sugar pine in central California. These locations were in the eastern Sierra Nevada Range without a history of selection by *Cronartium ribicola* for the resistance gene, Cr1.

Monterey pine with typical pitch canker symptoms. Dead needles and naked tips are due to girdling lesions caused by pitch canker. Photo by: T. Gordon, UC Davis

Pitch Canker (*Fusarium circinatum*)

Monterey pines (*Pinus radiata)* with pitch canker were observed near the coast from the Monterey Peninsula north through Marin Co. Most trees had a limited number of dead or dying tips with only a small portion of the canopy affected. In the Del Monte Forest, Monterey Co., younger trees showed few new infections, continuing a downward trend in that area that has been apparent since 2012. In part, this trend is likely due to systemic-induced resistance which renders trees less susceptible to pitch canker following initial exposure. Conversely, bishop pines (*Pinus muricata*) at Pt. Reyes National Seashore continued to sustain high infection rates. Monitoring plots were established in regenerating stands, wherein the incidence of disease was observed to increase from 6% in 2011, to 20% in 2012, and 34% in 2013. Results from the 2014 survey were not available at the time of this report, but early indications suggested an increase in incidence

The pitch canker pathogen has been isolated from grass species in Monterey and bishop pine forests on the Monterey Peninsula and at Pt. Reyes National Seashore, respectively. While the infected grasses showed no symptoms, isolates obtained from them were shown to be pathogenic to Monterey pine. Greenhouse inoculation tests documented the susceptibility of four additional grass species native to coastal pine forests. These results indicate that symptomless grasses could serve as bridge hosts, facilitating movement of the pathogen between stands of susceptible pines.

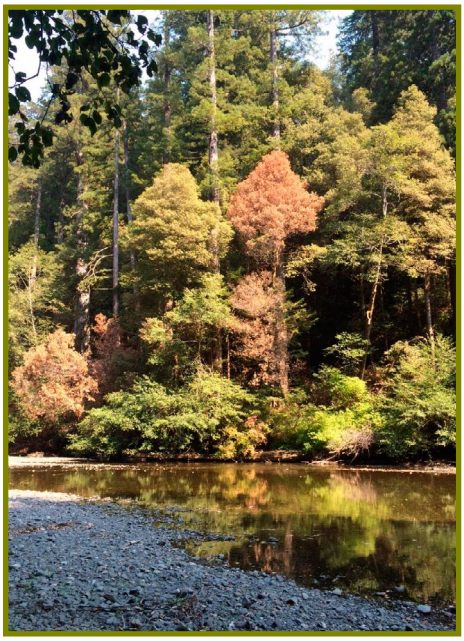
Foamy Bark Canker (*Geosmithia pallida*)

Foamy bark canker is a new pest complex of oaks in southern California that is caused by the fungus *Geosmithia pallida*, which is carried by the native western oak bark beetle. It was first reported causing dieback and death of trees from Riverside to San Luis Obispo Cos. Symptoms include wet discoloration on the trunk and main branches of infected coast live oak trees where burrowing western oak bark beetle entry holes are found. Multiple holes can often be seen on an infected tree. Recent finds in San Luis Obispo, Monterey, Marin, Sonoma, Napa, and El Dorado Cos. have extended the disease range north. The primary host has been coast live oak, although other oaks species have been impacted. Pathogenicity tests are ongoing for various oak species.

Port-Orford-Cedar Root Disease (*Phytophthora lateralis*)

No major new infestations of Port-Orford-cedar (*Chamaecyparis lawsoniana*) root disease were reported in 2014. An eradication project was completed over a 10-acre area on Saint Germaine Foundation property in Dunsmuir (Siskiyou Co.) from the historic Shasta Springs Trail to the Sacramento River. The treatment was in response to an extensive infestation that was identified in 2010 and was designed to both eradicate *Phytophthora lateralis* and reduce falling tree hazards along the trail. For the first time since its introduction into the area in the mid-1990s, Port-Orford-cedar root disease was identified in a Port-Orford-cedar tree in Fish Lake Campground on the Orleans RD of the Six Rivers NF (Humboldt Co.). The pathogen most likely spread from a 5-acre mortality center adjacent to the west side of the campground where infected trees have been dying since 2010.

Infected Port-Orford-cedar at Fish Lake Campground, Six Rivers NF.
Photo by: P. Angwin, USFS



View of dead and dying *Phytophthora ramorum*-infected tanoak along the bank of Redwood Creek between Bond and 44 Creeks.
Photo by: L. Morgan, Redwood NP

Sudden Oak Death (*Phytophthora ramorum*)

Sudden oak death (SOD) continued to be the primary cause of tree mortality in coastal California from Monterey to Humboldt Cos., with USFS aerial surveys estimating over 125,630 dead trees across 28,700 acres (down from 2013 levels). In March, *Phytophthora ramorum* was found for the first time in Trinity Co., bringing the number of infested California counties to 15. The infestation is on an 80-acre Bureau of Land Management (BLM) parcel in the North Dobbyn Creek watershed, 6 miles southeast of the nearest known infestation. In September, the pathogen was also found on adjacent land on the Six Rivers NF, immediately east of the BLM parcel.

The disease continued to spread and intensify in Humboldt Co., with several new infestations found in parts of the northern coastal region. In December 2013, the pathogen was confirmed in the Mad River watershed (Humboldt Co.), about 5.5 mi. southeast of the town of Maple Creek. In July and September, *P. ramorum* was confirmed at two sites along Redwood Creek in Redwood NP (Humboldt Co.). The first location is a 35-acre area at the confluence of Redwood and Bridge Creeks, the second is 64-acres along Redwood Creek between Bond and 44 Creeks. The two infestations are approximately 3 miles apart, 11 air miles north of the Redwood Valley infestation, and 19 miles south of the Del Norte Co. line. The Redwood NP staff plans to treat the infestation. Del Norte Co. continues to be free of the disease.

In eastern Santa Cruz Co., a canyon on the San Benito Co. border was found positive for *P. ramorum*. While this is one of the easternmost infestations in California, it is a cool location that is conducive to pathogen establishment, with redwood and tanoak. Unexpectedly high levels of *P. ramorum* were found in north Berkeley (Alameda Co.) and adjacent Tilden Regional Park (Contra Costa Co.), with the pathogen found on California bay laurel and oaks. High levels of *P. ramorum* were also observed in the region between Novato (Marin Co.), Petaluma, and Sonoma (Sonoma Co.).

Oak and tanoak mortality associated with sudden oak death in 2014 detected via aerial survey. Map by: A. Ellis, USFS

The drought has led to a reduction in the number of infected trees in many warmer oak woodland areas as well as in areas where *P. ramorum* has recently become established, including southern Mendocino, northern Sonoma, and southern Alameda Cos. as well as the eastern San Francisco Peninsula and Carmel Valley Village (Monterey Co.).

Monitoring for *Phytophthora ramorum* in Bear Gulch, Jackson Demonstration SF, Mendocino Co. Photo by: H. Mehl, UC Davis

In 2014, 146 waterways in Del Norte, Humboldt, Mendocino, Monterey, and San Luis Obispo Cos. were monitored for *P. ramorum*. Overall, recovery from known positive watersheds was low compared to previous years, with *P. ramorum* detected in only 13 (54%) of 24 previously positive sites. This was likely a consequence of low spring rainfall throughout California. Recovery was lowest in Monterey (1 of 5; 20%), followed by Humboldt (6 of 12; 50%) and Mendocino Cos. (6 of 7; 86%). However, even with reduced recovery rates, the pathogen was still detected for the first time in six watersheds (three each in Humboldt and Mendocino Cos.).

In northern Humboldt Co., *P. ramorum* was detected for the first time in Beaver Creek, a tributary of Redwood Creek (upstream of Cookson Ranch, Redwood Valley). In southern Humboldt Co., two watersheds near the southwest border of the Six Rivers NF were positive for the first time - Butte (Van Duzen watershed) and Cooper (Eel River watershed) Creeks.

In Mendocino Co., waterways in Jackson Demonstration State Forest continued to be intensively sampled. *P. ramorum* was detected in 2014 for the first time in the North Fork of the Big River and the West Fork of Chamberlain Creek, both near the Camp 20 day use area on Hwy 20, as well as in Hare Creek, a watershed southeast of Fort Bragg.

In nurseries, California had one new *P. ramorum*-positive facility identified in 2014 in Sacramento Co. Plants found infected included camellias, viburnum, and lilac; the nursery was disinfected according to USDA protocol. A total of 13,839 samples were taken from nurseries statewide in 2014; however, many of those were prior to the USDA Animal and Plant Health Inspection Service March 2014 rule change requiring only previously positive nurseries and interstate shipping nurseries within the quarantined area (infested counties) to be inspected. Since the March rule, 3,360 samples have been taken from the seven previously positive nurseries. Nurseries within the quarantined area that ship out of California are still inspected and tested regularly, but yielded negative results.

Crown and root rot of sticky monkey flower plant caused by *Phytophthora tentaculata.* Photo by: S. Latham, CDFA

Phytophthora tentaculata

In 2014, *Phytophthora tentaculata* was detected in nursery stock that had been outplanted in Monterey and Alameda Co. restoration locations, raising concerns about the potential movement of exotic *Phytophthora* species from restoration nurseries to wildland settings. To date, the pathogen has been found in California in four native plant nurseries in Monterey, Santa Cruz, Placer, and Butte Cos. on sticky monkey flower (*Diplacus aurantiacus*), toyon (*Heteromeles arbutifolia*), coffeeberry (*Frangula californica*), and *Salvia* spp.

Phytophthora tentaculata was first detected in the US on potted sticky monkey flower plants grown for restoration purposes at a California nursery in 2012. They exhibited severe root and crown rot and had a mortality rate of approximately 30%. This root and stalk rot pathogen infects primarily woody and perennial shrubs. In Europe and China it has been detected on *Apium, Aucklandia, Chicorium, Chrysanthemum, Delphinium, Gerbera, Lavandula, Santolina, Origanum*, and *Verbena* spp. Prior to 2012 it was ranked fifth on a USDA list for *Phytophthora* species not established in the US that present a serious risk if introduced. It continues to be treated as a federally actionable and quarantined pest.

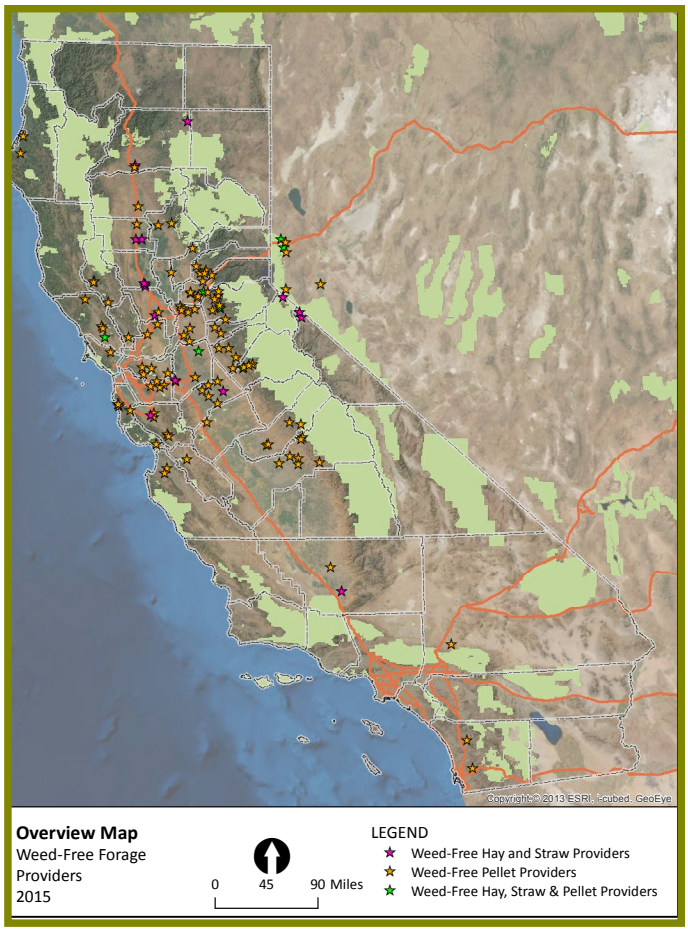
By David Bakke

Statewide Developments in 2014

Assembly Bill (AB) 2402 was approved by the Governor on August 22, 2014. This bill amended portions of the Food and Agricultural Code and revised the funding formula for counties and Weed Management Areas from the Noxious Weed Management Account. Although early versions of the bill included some funding, the version eventually approved and signed by the Governor did not. The CFPC sent in a letter of support for AB 2402 in March 2014.

WHIPPET (Weed Heuristics: Invasive Population Prioritization for Eradication Tool) is now online. This program is used to prioritize treatments of known populations of invasive plants in an area. An online version, developed by the California Invasive Plant Council (CAL-IPC) in cooperation with Gina Darin (initial developer, while at CDFA and UC Davis), is available at http://whippet.cal-ipc.org/. It utilizes species biology and impacts, size and location of populations, and the feasibility of control.

Weed-free materials – As a follow-up to the 2012 signing of a statewide memorandum of understanding, representatives from federal land management agencies, state and local agencies, and other organizations have been working on implementation tools, guidelines, and suggested policies that will affect agencies' use of certified weed-free materials. One of the accomplishments for 2014 was an updated list of suppliers of certified weed-free materials, located on the Cal-IPC website (http://www.cal-ipc.org/ip/prevention/weedfreeforage.php).



Weed-free forage providers in California. Map by: CAL-IPC

New or Newly Naturalized Invasive Plant Species in California

Old man's beard. Photo by: K. Moore, Wildlife Restoration Team

***Dittrichia viscosa* (false yellowhead)** – Found in 2014 in one location in Solano Co., the intent is to eradicate this species before it spreads like the closely related stinkwort (*D. graveolens*).

***Clematis vitalba* (old man's beard)** – This kudzu-like perennial vine has been found climbing coastal redwoods in Santa Cruz Co. as well as adjacent to Muir Woods in Marin Co. It is considered noxious in Washington and New Zealand.

***Lamiastrum galeobdolon* (yellow archangel)** – After earlier records of sightings in Sonoma (2012) and Marin (2013) Cos., this member of the mint family has been found in Santa Cruz Co. It is a perennial ground cover that can invade the coastal redwood understory.

Plant Species that May Arrive in California

***Impatiens glandulifera* (policeman's helmet)** – This weed is heading down the Oregon coast and has been found as far south as Coos Co., Oregon. Although there are a few records in Calflora from Marin and Mendocino Cos., this tall growing annual (up to 8 ft.) that prefers riparian habitats should be considered an early detection species for the North Coast of California.

California-Approved Biocontrols for Invasive Plants

In the CAL-IPC 2014 News winter newsletter (Volume 22, #1, available on CAL-IPC's website), there is a list of biocontrols that are approved by the California Department of Food and Agriculture by target plant species. There was continuing work in 2014 on biocontrols for other invasive plants that can be problematic in California's wildlands, including: *Acroptilon repens* (Russian knapweed), *Cirsium arvense* (Canada thistle), *Chondrilla juncea* (rush skeletonweed), and *Hypericum perforatum* (Klamath weed).

by Leo Liu

The new Forest Pest Observation Database Application (FPODA) will serve as the primary repository for all forest pest observations in California. Historically, pest observations were captured through a combination of the annual California Forest Pest Conditions Report and documented using Pest Detection Reports (PDRs). While these methods captured the information, they were not easily accessed or searchable. FPODA is a fully searchable (including by pest, host, and location) web-based application that will be accessible to land managers and the public. FPODA will serve as the foundation for the restructured annual California Forest Pest Conditions Report, containing all of the detailed, site-specific information which will allow for a more streamlined report that focuses more on overall pest trends and highlights.

Data entry will initially be restricted to forest health professionals from state and federal agencies. Public and private land managers will be able to submit reports to forest health contacts for database entry. A new PDR form (electronic and hard copy) is currently being developed that will replace the old version.

There were 100 entries into the database in 2014 (dots on map correspond to locations with database entries).

FPODA is a collaborative project by the USFS R5 SPF Forest Health Protection, USFS Forest Health Technology Enterprise Team, the California Department of Forestry and Fire Protection, and the California Forest Pest Council.

The California Forest Pest Council (CFPC), a 501(c)(3) non-profit organization, was founded in 1951 as the California Forest Pest Control Action Council. Membership is open to public and private forest managers, foresters, silviculturists, entomologists, plant pathologists, biologists, and others interested in the protection of California's urban and wildland forests from injury caused by biotic and abiotic agents. The Council's objectives are to establish, maintain, and improve communication among individuals who are concerned with these issues. These objectives are accomplished by:

1. Coordinating the detection, reporting, and compilation of pest injury, primarily from forest insects, diseases, and animal damage.
2. Evaluating pest conditions, primarily those of forest insects, diseases, and animal damage.
3. Making recommendations on pest control to forest managers, protection agencies, and forest landowners.
4. Reviewing policy, legal, and research aspects of forest pest management and submitting recommendations to appropriate authorities.
5. Fostering educational work on forest pests and forest health.

The California Board of Forestry and Fire Protection recognizes the Council as an advisory body in forest health protection, maintenance, and enhancement issues. The Council is a participating member in the Western Forest Pest Committee of the Western Forestry and Conservation Association.

This report was prepared by Forest Health Protection, US Forest Service, Pacific Southwest Region and the California Department of Forestry and Fire Protection with other member organizations of the Council. It was published by the California Department of Forestry and Fire Protection and distributed by it and the US Forest Service.

The report can be found online at http://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprd3834158.pdf.

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Cover Photos

Underscoring California's severe drought, the 2014 California Forest Pest Conditions report cover is an image of the Angeles NF overlaid by the US Drought Monitor map of California, April 29, 2014, and the USFS California Aerial Survey Tree Mortality map, 2014.

The Angeles NF image (J. Morre, USFS) highlights the impacts of prolonged exposure to severe drought conditions.

The US Drought Monitor map of California, April 29, 2014 (E. Luebehusen, NCDC/NOAA), shows 96% of California in either severe, extreme, or exceptional drought.

The USFS California Aerial Survey Tree Mortality map, 2014 (Z. Heath, USFS), shows a near doubling of mortality from 2013.

USDA United States Department of Agriculture

Forest Service Pacific Southwest Region

California Department of Forestry and Fire Protection

California Forest Pest Council

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